

ABSTRACT OF THE DISCLOSURE

An artificial neural network system for analyzing sequence motif content for prediction of antisense oligonucleotide-target activity is disclosed. The system was developed for high specificity predictions, with cross-validation used to rigorously test against the database that was used in the development of the system. The system is able to choose effective oligonucleotides leading to >75% reduction in RNA target expression with >55 % accuracy. This is in contrast to <10% success rate for trial-and-error oligonucleotide selection. Thus, the program provides a five-fold reduction in the number of oligonucleotides to be screened *in vivo* to find effective targets.